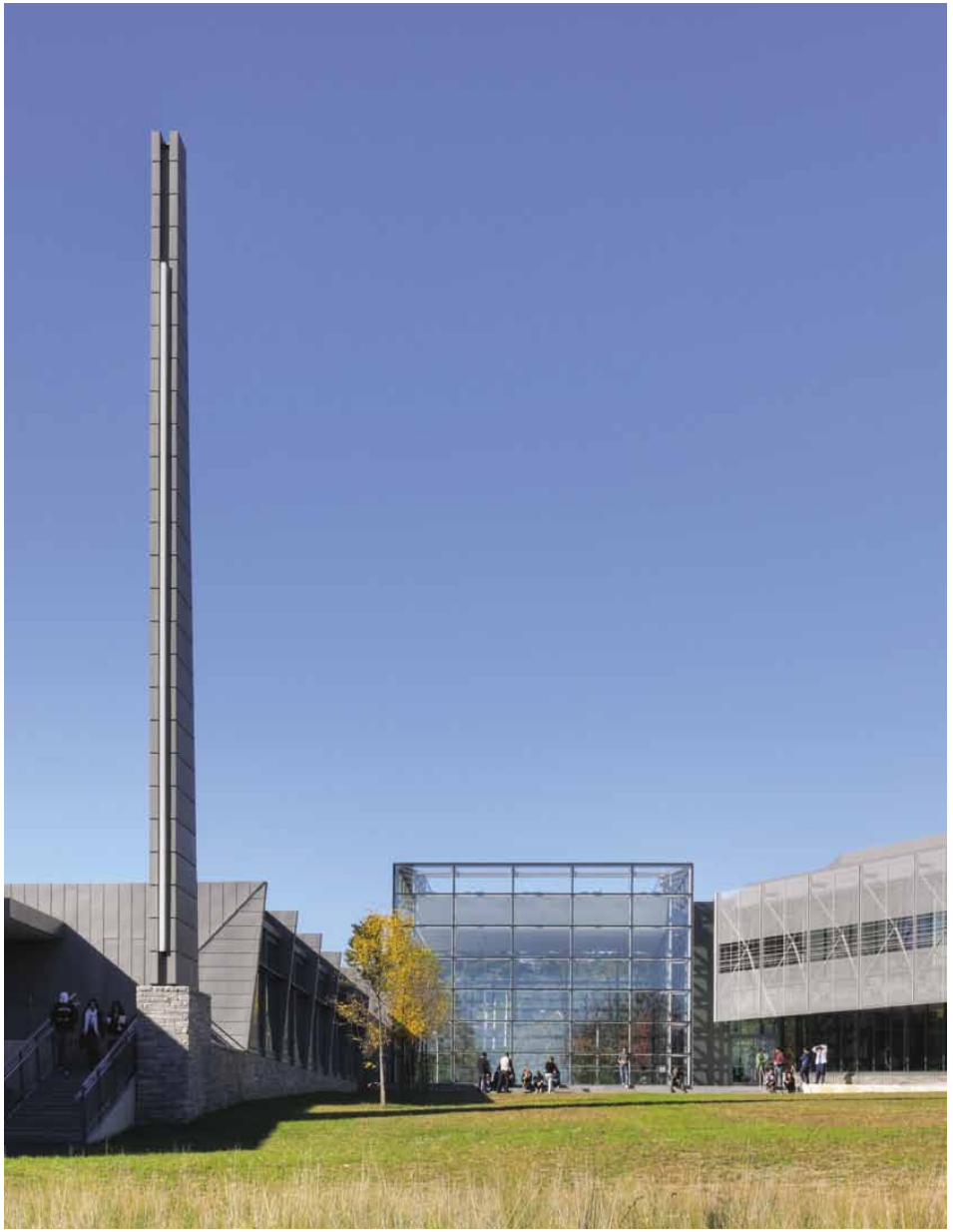


Left A 60-foot-tall tower framed in steel and clad with zinc panels anchors the facility's south wing.

Gateway Center

Custom-designed architecturally exposed structural steel creates a welcoming environment for Westchester Community College.

AS PRIMARILY A COMMUTER SCHOOL, Westchester Community College long lacked a centralized hub on campus, a place both to welcome students and offer them a comfortable space in which to congregate. The school also needed to expand its overburdened facilities, particularly for its English as a second language and business departments. With an eye toward fixing this state of affairs, the institution hired Ennead Architects to design a new building that would include classrooms, offices, language and computer labs, an auditorium, and, most importantly, an architecturally inspiring public space. Working in close collaboration with structural engineers Leslie E. Robertson Associates (LERA), Ennead developed the idea of creating an entryway for the campus. In architectural terms, the concept addressed the theme of a threshold that would rest with a weightless quality atop the college's carefully landscaped grounds. In material terms, this led the team to one solution: architecturally exposed structural steel (AESS).

Another factor that played into the choice of structural material was cost. "This was a Wicks Law job where anybody could bid," explains Ennead design partner Susan Rodriguez. "To ensure that we would get good results no matter who won the contract we worked with LERA and created a modular system." The prefabrication possibilities of structural steel, as well as its relatively fast erection process, allowed the team to realize the project's design intent without greatly increasing its budget.

"On a conceptual level we wanted to build a bridge between a manufacturing process and a custom fabrication process," adds Dan Sesil of LERA. "Most of our buildings involve unique structural conditions that add time and money to a project. There's some of that here, but by creating a building block that leant itself more to manufacturing we were able to deliver a custom appearance without the fussy fabrication process. Steel was the natural choice for that."

At a total cost of $33 million, the Gateway Center is a 70,000-square-foot, three-story building with two academic wings that embrace a landscaped courtyard. At the convergence of the two wings is a 48-foot-tall glass pavilion that serves as the lobby and welcome center. It was here that the designers put into play their modular system: 233 AESS boxes stacked one atop the other and forming a slim profile grid structure that supports the glass volume.

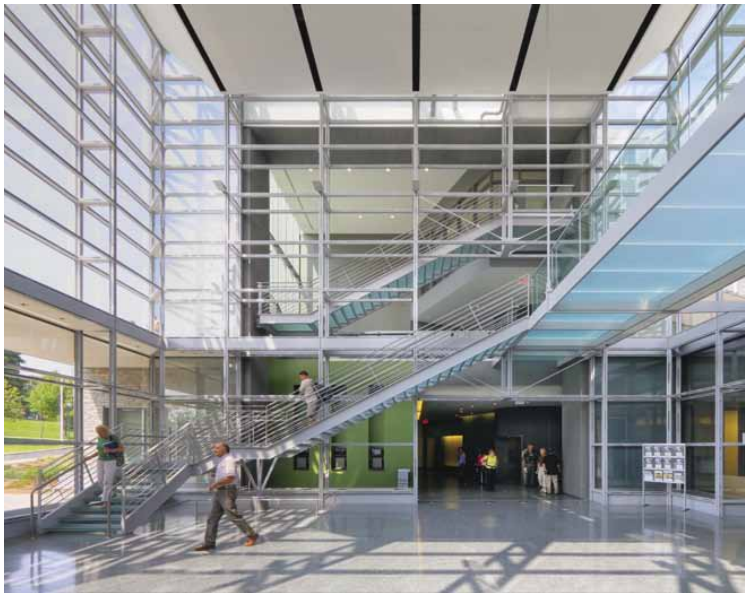
"We worked the system to reduce the number of members and small scale components that make up each box," says Rodriguez. "The boxes combined with low iron glass on both facades create a condition of near total transparency, reinforcing the symbol of the gateway as a threshold to the campus."

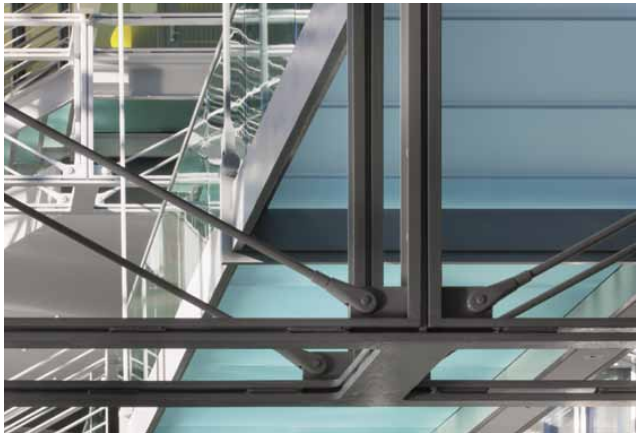
Left Steel framing for the west cantilever.
Center The east cantilever is supported by four steel trusses and projects more than 30 feet.
Below The project's transparent glass pavilion is composed of 233 architecturally exposed structural steel boxes.

This page A custom-designed brise soleil facing the center's south-facing courtyard reduces solar gain for the LEED Gold certified building while preserving views of the campus for those inside.

Opening page: Jeff Goldberg/Esto; this page: LEPA

This page: Jeff Goldberg/Esto





Above The pavilion's stair and bridge enhance circulation between the center's two academic wings.
Left Steel hangar rods with custom pin and jaw fittings support the pavilion bridge at mid-span.

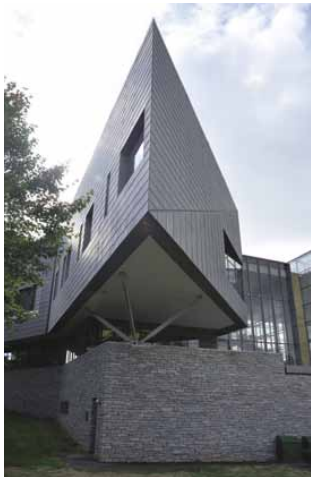
This spread: Jeff Goldberg/Esto

Above LERA's collaboration with the project's steel fabricator reinforced Ennead's design concept of a building that sits lightly on the land.

Constructed with 4-inch channels and 1-inch-thick plate, each box measures 8 feet 11⅛ inches long by 4 feet 7¼ inches high by 3 feet deep. They were prefabricated in the shop and then trucked to the campus with a temporary internal bracing element that kept them from deforming during shipping and installation. At the site, a crack team of ironworkers stacked the boxes and connected them. Most connections are made with shims and ⅞-inch-diameter type A325 bolts. This system optimized erection time by limiting the amount of field welding necessary. The curtain wall connections are steel plate tabs that were welded to the boxes in the shop. All of the primary members used in the project were fabricated from Grade 50 structural steel and the connection plates from A36.

An AESS stair and bridge spans the pavilion's volume, connecting the second floors of the two wings. Both are fabricated out of PL 1¾-inch-by-12-inch structural steel stringer plates and channels. The treads of the stair and floor of the bridge are made from laminated glass panels that keep daylight moving freely through the space. At mid-span, two steel hangar rods connect the bridge to the pavilion's main stringers via custom pin and jaw fittings designed by LERA.

The building's two academic wings, also framed in structural steel, are built with a typical wide flange, post-and-beam construction with floors of concrete over metal deck. To reinforce the effect of the building's appearance of weightlessness, the designers cantilevered the third floor out over the base on all sides from six to 30 feet. The east and west ends of the structure feature the most significant of these cantilevers. The larger of the two, the east cantilever is supported by four trusses on the roof made up of wide flange sections that range from W14x120 to W14x283 with double-angle diagonals that range in size from 2L6x4x½ to 2L8x6x1, the volume projects more than 30 feet out over the grass below. The trusses provide other services as well, forming parapet walls that disguise the roof's mechanical systems. A 40-foot cantilever for the west end was included in the original design, but was eliminated during value engineering. The designers came up with an alternative solution of supporting the protrusion with an AESS inverted tripod element. The tripod reduces the cantilever to 24 feet. The tripod is built up from parallel PL 1¼-inch-by-7½-inch plates stitched together at regular intervals with 3-inch diameter round spacer bars. The resulting member resembles



a ladder in construction. Each leg terminates in a steel pin detail that eliminates bending forces in the tripod. A plate assembly at the base ties the 4-inch-diameter pins together, transmitting gravity and lateral forces to the foundation.

"The Gateway Center marks the entrance to the campus visually as well as functionally," says Rodriguez. While the building elements described above fulfill that functional role, the team wanted something to anchor the south wing of the facility. For this they again turned to structural steel, using it to construct a 60-foot-tall tower designed for that purpose. The tower tapers from 10 feet wide at the base to less than 3 feet at the top. Clad with zinc panels, it is built up from two interconnected 1-inch structural steel plates into an 18-inch overall cross-section. Equipped with a full-height LED array, the tower is easily identifiable from anywhere on campus day or night, helping to orient students and creating an iconic symbol for the school. It also stands as a monument to the design flexibility of structural steel in its ability to serve the needs of architecture regardless of the size of the budget or the ambition of the design.

Above The atrium joins the 70,000-square-foot facility's east and west wings with a three-story day-lit atrium.
Above left An inverted tripod of architecturally exposed structural steel supports the projecting volume of the west cantilever.

This spread: Jeff Goldberg/Esto

GATEWAY CENTER

Location: **Westchester Community College, Valhalla, NY**
Structural Engineer: **Leslie E. Robertson Associates**, *New York, NY*
MEP Engineer: **Thomas Polise Consulting Engineer**, *New York, NY*
Construction Manager: **STV**, *New York, NY*
General Contractor: **Worth Construction Co. Inc.**, *Bethel, CT*
Structural Steel Erector: **Cross County Contracting Inc.**, *Pinebush, NY*
Architectural Metal Erector: **Cross County Contracting Inc.**, *Pinebush, NY*
Ornamental Metal Erector: **Cross County Contracting Inc.**, *Pinebush, NY*
Curtain Wall Erector: **Cross County Contracting Inc.**, *Pinebush, NY*
Metal Deck Erector: **Cross County Contracting Inc.**, *Pinebush, NY*